Upper Souris National Wildlife Refuge, Dam 96
Along the Souris River
Ward County (FOXHOLM VICINITY)
North Dakota

HAER No. ND-3-C

HAER
ND,
51-FOX.V,
1-C-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
Rocky Mountain Regional Office
National Park Service
U.S. Department of the Interior
12795 W. Alameda Parkway
Denver, Colorado 80225

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HISTORIC AMERICAN ENGINEERING RECORD

Upper Souris National Wildlife Refuge, Dam 96

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Location: Along the Souris River, in the Upper Souris National Wildlife Refuge, Ward County, North Dakota (FOXHOLM VICINITY)

UTM: Zone 14, N. 536180 m, E. 312380 m
Quad: Carpio NE

Date of Construction: 1935-1936

Present Owner: U.S. Fish and Wildlife Service

Present Use: Damming Souris River

Significance: The dams within the J. Clark Salyer National Wildlife Refuge represent a historical movement to preserve wildlife and wildlife habitat in the United States, which began in the mid-19th century and continues today. The refuge dams are significant for their association with the development of the national wildlife refuge system during the New Deal Era. At the time of its creation, the J. Clark Salyer Wildlife Refuge was considered the most important project in the Federal Government's program of migratory waterfowl habitat restoration. The dams also are representative examples of dams designed by the Federal Government during the New Deal Era for conservation projects.

Historians: Frederick L. Quivik, RTI, Inc., August 1989
Mary E. McCormick, RTI, Inc., August 1989
Jane L. Carroll, St. Paul District Corps of Engineers, March 1990

For more historical information, see Upper Souris National Wildlife Refuge Dams, HAER No. ND-3

DAM 96

Dam 96 is located in Ward County (S 1/4 Sec. 34 T157N, R84W) about five miles southeast, or downstream, from the refuge headquarters near Dam 83 at Lake Darling. Dam 9687 impounds water from the Souris River into several small bodies of water, as well as other wetlands suitable for waterfowl habitat, such as marshes and meadows.

Dam 96 consists of a homogeneous earthfill embankment, an emergency spillway, a service spillway, and outlet works. The dam is oriented along a east/west axis and has a total length of about 3,000 feet, a hydraulic height of 15.4 feet, a crest elevation of 1,579-6 feet, and a crest width that varies between 8 and 14 feet. The upstream side of the embankment has a slope of 7:1, while the slope of the downstream side is 4:1. The crest and slopes of the embankment are vegetated by grass and low brush.

The emergency spillway is an uncontrolled structure located near the center of the earthfill embankment. It consists of a 700-foot-long weir wall with a crest elevation at 1,577.2 feet. Under the crest of the entire spillway is a 6-foot-deep timber cutoff wall. Most of the weir wall is the original 4-foot-high stone-masonry wall with stone-masonry wing walls, and a 4-foot-long stone-masonry apron downstream. In 1951, however, a section about 75 feet long at the west end of the weir, including the apron, was removed and replaced with a reinforced concrete wall, supported on its downstream side by concrete buttresses, spaced 12 feet on center. At the same time, the west wing wall was also reinforced by construction of a concrete wall along its inside face [1] The conveyance structure for the emergency spillway is a 15 to 20-foot-wide ditch that connects the downstream side of the spillway to the main river channel. The ditch runs parallel to -- and approximately 20 feet downstream from -- the toe of the dam.

The service spillway and outlet works for the dam are located at the east abutment and are incorporated into a single reinforced concrete structure that spans the main river channel. All four corners of the structure are buttressed by stone masonry wing walls. Concrete piers divide the structure into six bays and also support a concrete walkway with a gas pipe railing. The walkway provides access to the controls of the outlet works, as well as to the rest of the dam. The two outer bays at each end of the structure are each 13 feet wide and contain concrete weir walls, which comprise the service spillway. The weir walls have a crest elevation of 1,576.9 feet.

The outlet works, located in a single bay near the middle of the concrete structure, consist of a radial gate measuring 16 feet by 8 feet with a top elevation for 1,577 feet. The radial gate is located along the upstream side of the concrete structure. In the small bay just east of the radial gate is a 4-foot by 4-foot sluice gate with a flow line elevation of 1,562 feet. Manual hoist wheels mounted on the walkway operate the sluice and radial gates. Immediately downstream from the outlet is a stilling basin, with the first four feet being stone masonry and the remainder a concrete apron.